

Claims:

1 1. An actuator, comprising: an actuator element physically supported by and coupled to a
2 suspension element at at least one application site of a bonding agent, the bonding agent covered
3 by a coating application.

1 2. The actuator of claim 1, wherein the actuator element is a micro-actuator.

1 3. The actuator of claim 2, wherein the micro-actuator is selected from a group consisting of
2 a piezoelectric micro-actuator, an electromagnetic micro-actuator, an electrostatic micro-
3 actuator, a capacitive micro-actuator, a fluidic micro-actuator, or a thermal micro-actuator.

1 4. The actuator of claim 1, wherein the bonding agent is a silver paste.

1 5. The actuator of claim 1, wherein the coating application has a glass transition temperature
2 greater than 120 degrees Celsius.

1 6. The actuator of claim 1, wherein the coating application has a Young's modulus greater
2 than 0.6G Pa.

1 7. The actuator of claim 1, wherein the coating application is an epoxy agent.

1 8. The actuator of claim 7, wherein the epoxy agent contains a filler ingredient.

1 9. The actuator of claim 8, wherein the filler ingredient is selected from a group consisting
2 of metal, glass, or a fiber material.

1 10. The actuator of claim 1, further comprising a step element to maintain a parallel spatial
2 relationship between the actuator element and the suspension element.

1 11. The actuator of claim 10, wherein the step element is created by thickening a portion of
2 the actuator element.

1 12. The actuator of claim 10, wherein the step element is coupled to a portion of the actuator
2 element.

1 13. A system, comprising:
2 an actuator element;
3 a suspension element coupled to and supporting the actuator element by at least one
4 application site of a bonding agent, the bonding agent covered by a coating application.

1 14. The system of claim 13, further comprising a magnetic head element coupled to the
2 suspension element by at least one application site of a bonding agent, the bonding agent covered
3 by a coating application.

1 15. The system of claim 13, wherein the actuator element is selected from a group consisting
2 of a piezoelectric micro-actuator, an electromagnetic micro-actuator, an electrostatic micro-
3 actuator, a capacitive micro-actuator, a fluidic micro-actuator, or a thermal micro-actuator.

1 16. The system of claim 15, wherein the micro-actuator is a piezoelectric micro-actuator.

1 17. The system of claim 13, further comprising a slider element coupled to the actuator
2 element.

1 18. The system of claim 13, further comprising a hard drive to be read by the slider element.

1 19. The system of claim 13, wherein the bonding agent is a silver paste.

1 20. The system of claim 13, wherein the coating application has a glass transition
2 temperature greater than 120 degrees Celsius.

1 21. The system of claim 13, wherein the coating application has a Young's modulus greater
2 than 0.6G Pa.

1 22. The system of claim 13, wherein the coating application is an epoxy agent.

1 23. The system of claim 22, wherein the epoxy agent contains a filler ingredient.

1 24. The system of claim 23, wherein the filler ingredient is selected from a group consisting
2 of metal, glass, or a fiber material.

1 25. The system of claim 13, further comprising a first step element to maintain a parallel
2 spatial relationship between the actuator element and the suspension element.

1 26. The system of claim 25, wherein the first step element is created by thickening a portion
2 of the actuator element.

1 27. The system of claim 26, wherein a second step element is molded into the suspension
2 element.

1 28. The system of claim 25, wherein the first step element is coupled to a portion of the
2 actuator element.

1 29. The system of claim 28, wherein a second step element is coupled to a portion of the
2 suspension element.

1 30. The system of claim 25, wherein the first step element is molded into the suspension
2 element.

1 31. The system of claim 25, wherein the first step element is coupled to a portion of the
2 suspension element.

1 32. The system of claim 25, wherein the first step element is coupled to a portion of the
2 suspension element using one of a group of materials comprising epoxy, resin, anisotropic
3 conductive film, and anisotropic conductive adhesive.

1 33. The system of claim 25, wherein the first step element is coupled to a portion of the
2 micro-actuator element using one of a group of materials comprising epoxy, resin, anisotropic
3 conductive film, and anisotropic conductive adhesive.

1 34. A method, comprising:
2 coupling an actuator element to a suspension element using at least one application site of
3 a bonding agent; and
4 covering the bonding agent with a coating application.

1 35. The method of claim 34, further comprising:
2 coupling a magnetic head element to the suspension element using at least one
3 application site of the bonding agent; and
4 covering the bonding agent with the coating application.

1 36. The method of claim 34, wherein the actuator element is a micro-actuator.

1 37. The method of claim 36, wherein the micro-actuator is selected from a group consisting
2 of a piezoelectric micro-actuator, an electromagnetic micro-actuator, an electrostatic micro-
3 actuator, a capacitive micro-actuator, a fluidic micro-actuator, or a thermal micro-actuator..

- 1 38. The method of claim 34, wherein the bonding agent is a silver paste.
- 1 39. The method of claim 34, wherein the coating application has a glass transition
- 2 temperature greater than 120 degrees Celsius.
- 1 40. The method of claim 34, wherein the coating application has a Young's modulus greater
- 2 than 0.6G Pa.
- 1 41. The method of claim 34, wherein the coating application is an epoxy agent.
- 1 42. The method of claim 41, wherein the epoxy agent contains a filler ingredient.
- 1 43. The method of claim 42, wherein the filler ingredient is selected from a group consisting
- 2 of metal, glass, or a fiber material.
- 1 44. The method of claim 34, further comprising maintaining a parallel spatial relationship
- 2 between the actuator element and the suspension element using a first step element.
- 1 45. The method of claim 44, further comprising creating the first step element by thickening
- 2 a portion of the actuator element.
- 1 46. The method of claim 45, further comprising molding a second step element into the
- 2 suspension element.

1 47. The method of claim 44, further comprising coupling the first step element to a portion of
2 the actuator element.

1 48. The method of claim 47, further comprising coupling a second step element to a portion
2 of the suspension element.

1 49. The method of claim 44, further comprising molding the first step element into the
2 suspension element.

1 50. The method of claim 44, further comprising coupling the first step element to a portion of
2 the suspension element.

1 51. The method of claim 44, further comprising coupling the first step element to a portion of
2 the suspension element using one of a group of materials comprising epoxy, resin, anisotropic
3 conductive film, and anisotropic conductive adhesive.

1 52. The method of claim 44, further comprising coupling the first step element to a portion of
2 the micro-actuator element using one of a group of materials comprising epoxy, resin,
3 anisotropic conductive film, and anisotropic conductive adhesive.